# interface

Use the **interface** global configuration command to configure an interface type and enter interface configuration mode.

**interface** *type number*
**interface** *type slot/port* (for the Cisco 7200 series routers, and for the Cisco 7500 series routers with a Packet over SONET Interface Processor)
**interface** [*type slot/port-adapter/port*] [**ethernet** | **serial**] (for ports on VIP cards in the Cisco 7500 series routers)
**interface serial** *slot/port***:***channel-group* (for channelized T1 or E1 on Cisco 7500 series routers)
**interface serial** *number***:***channel-group* (for channelized T1 or E1 on the Cisco 4000 series routers and the Cisco MC3810)

To configure a subinterface, use this form of the **interface** global configuration commands:

**interface** *type slot/port-adapter/port***.***subinterface-number* {**multipoint** | **point-to-point**} (for ports on VIP cards in the Cisco 7500 series routers)
**interface** *type slot/port***.***subinterface-number* {**multipoint** | **point-to-point**} (for the Cisco 7200 series routers)
**interface** *type slot/port-adapter***.***subinterface-number* {**multipoint** | **point-to-point**} (for the Cisco 7500 series)

## Syntax Description

| | |
|---|---|
| *type* | Type of interface to be configured. See Table 10. |
| *number* | Port, connector, or interface card number. On a Cisco 4000 series router, specifies the NPM number. The numbers are assigned at the factory at the time of installation or when added to a system, and can be displayed with the **show interfaces** command. |
| *slot* | Refer to the appropriate hardware manual for slot and port information. |
| *port* | Refer to the appropriate hardware manual for slot and port information. |
| *port-adapter* | Refer to the appropriate hardware manual for information about port adapter compatibility. |
| **:***channel-group* | The Cisco 4000 series routers specifies the T1 channel group number in the range of 0 to 23 defined with the **channel-group** controller configuration command. On a dual port card, it is possible to run channelized on one port and primary rate on the other port.<br><br>The Cisco MC3810 specifies the T1/E1 channel group number in the range of 0 to 23 defined with the **channel-group** controller configuration command. |
| **.***subinterface-number* | Subinterface number in the range 1 to 4294967293. The number that precedes the period (.) must match the number to which this subinterface belongs. |
| **multipoint** \| **point-to-point** | (Optional) Specifies a multipoint or point-to-point subinterface. There is no default. |

## Default

No interface types are configured.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0 for the Cisco 7000 series routers.
This command first appeared in Cisco IOS Release 11.0 for the Cisco 4000 series routers.

This command was changed in Cisco IOS Release 11.2 to add the **posi** keyword.
This command was changed in Cisco IOS Release 11.3 to change the **posi** keyword to **pos**.
This command was changed in Cisco IOS Release 12.0 to add the **switch** keyword.

Subinterfaces can be configured to support partially meshed Frame Relay networks. Refer to the part entitled "Configuring Serial Interfaces" in the *Cisco IOS Interface Configuration Guide*.

There is no correlation between the number of the physical serial interface and the number of the logical LAN Extender interface. These interfaces can have the same or different numbers.

**Table 10 Interface Type Keywords**

| Keyword | Interface Type |
|---|---|
| **async** | Port line used as an asynchronous interface. |
| **atm** | ATM interface. |
| **bri** | Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI). This interface configuration is propagated to each of the B channels. B channels cannot be individually configured. The interface must be configured with dial-on-demand commands in order for calls to be placed on that interface. |
| **dialer** | Dialer interface. |
| **ethernet** | Ethernet IEEE 802.3 interface. |
| **fastethernet** | 100-Mbps Ethernet interface on the Cisco 4500, Cisco 4700, Cisco 7000 and Cisco 7500 series routers. |
| **fddi** | Fiber Distributed Data Interface (FDDI). |
| **group-async** | Master asynchronous interface. |
| **hssi** | High-Speed Serial Interface (HSSI). |
| **lex** | LAN Extender (LEX) interface. |
| **loopback** | Software-only loopback interface that emulates an interface that is always up. It is a virtual interface supported on all platforms. The *interface-number* is the number of the loopback interface that you want to create or configure. There is no limit on the number of loopback interfaces you can create. |
| **null** | Null interface. |
| **port-channel** | Port channel interface |
| **pos** | Packet OC-3 interface on the Packet over SONET Interface Processor |
| **serial** | Serial interface. |
| **switch** | Switch interface |

**Table 10 Interface Type Keywords (continued)**

| Keyword | Interface Type |
|---|---|
| **tokenring** | Token Ring interface. |
| **tunnel** | Tunnel interface; a virtual interface. The *number* is the number of the tunnel interface that you want to create or configure. There is no limit on the number of tunnel interfaces you can create. |
| **vg-anylan** | 100VG-AnyLAN port adapter |

## Examples

The following example configures serial interface 0 with PPP encapsulation:

```
interface serial 0
 encapsulation ppp
```

The following example enables loopback mode and assigns an IP network address and network mask to the interface. The loopback interface established here will always appear to be up:

```
interface loopback 0
 ip address 131.108.1.1 255.255.255.0
```

The following example for the Cisco 7500 series router shows the interface configuration command for Ethernet port 4 on the EIP that is installed in (or recently removed from) slot 2:

```
interface ethernet 2/4
```

The following example begins configuration on the Token Ring interface processor in slot 1 on port 0 of a Cisco 7500 series routers:

```
interface tokenring 1/0
```

The following example shows how a partially meshed Frame Relay network can be configured. In this example, subinterface serial 0.1 is configured as a multipoint subinterface with three Frame Relay PVCs associated, and subinterface serial 0.2 is configured as a point-to-point subinterface.

```
interface serial 0
 encapsulation frame-relay
interface serial 0.1 multipoint
 ip address 131.108.10.1 255.255.255.0
 frame-relay interface-dlci 42 broadcast
 frame-relay interface-dlci 53 broadcast
interface serial 0.2 point-to-point
 ip address 131.108.11.1 255.255.0
 frame-relay interface-dlci 59 broadcast
```

The following example configures circuit 0 of a T1 link for Point-to-Point Protocol (PPP) encapsulation:

```
controller t1 4/1
circuit 0 1
interface serial 4/1:0
 ip address 131.108.13.1 255.255.255.0
 encapsulation ppp
```

The following example configures LAN Extender interface 0:

```
interface lex 0
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**circuit**
**controller**
**mac-address**
**ppp**
**show interfaces**
**slip**

# interface dialer

To designate a dialer rotary group leader, use the **interface dialer** global configuration command.

**interface dialer** *interface-number*

## Syntax Description

*interface-number* Integer that you select to indicate a dialer rotary group in the range 0 to 9.

## Default

No dialer rotary group leader is specified.

## Command Mode

Global configuration

## Usage Guidelines

Dialer rotary groups allow you to apply a single interface configuration to a set of interfaces. Once the interface configuration is propagated to a set of interfaces, those interfaces can be used to place calls using the standard dial-on-demand criteria. When many destinations are configured, any of these interfaces can be used for outgoing calls.

Dialer rotary groups are useful in environments that require many calling destinations. Only the rotary group needs to be configured with all of the **dialer map** commands. The only configuration required for the interfaces is the **dialer rotary-group** command that indicates which interface is part of a dialer rotary group.

Although a dialer rotary group is configured as an interface, it is not a physical interface. Instead it represents a group of interfaces. Any number of dialer groups can be defined.

Interface configuration commands entered after the **interface dialer** command will be applied to all physical interfaces assigned to specified rotary group.

## Example

The following example identifies dialer interface 1 as the dialer rotary group leader. Dialer interface 1 is not a physical interface, but represents a group of interfaces. The interface configuration commands that follow apply to all interfaces included in this group.

```
interface dialer 1
 encapsulation ppp
 dialer in-band
 dialer map ip 172.30.2.5 username YYY 14155553434
 dialer map ip 172.30.4.5 username ZZZ
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**dialer rotary-group**

# interface fastethernet

To select a particular Fast Ethernet interface for configuration, use the **interface fastethernet** global configuration command.

**interface fastethernet** *number* (Cisco 4500 and 4700 series routers)
**interface fastethernet** *slot*/*port* (Cisco 7200 series routers)
**interface fastethernet** *slot*/*port-adapter*/*port* (Cisco 7500 series routers)

## Syntax Description

| | |
|---|---|
| *number* | Port, connector, or interface card number. On a Cisco 4500 or 4700 series routers, specifies the NIM or NPM number. The numbers are assigned at the factory at the time of installation or when added to a system. |
| *slot* | Refer to the appropriate hardware manual for slot and port information. |
| *port* | Refer to the appropriate hardware manual for slot and port information. |
| *port-adapter* | Refer to the appropriate hardware manual for information about port adapter compatibility. |

## Default

Standard Advanced Research Projects Agency (ARPA) encapsulation is configured.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.2.

Default encapsulation type changed to ARPA in Cisco IOS Release 11.3.

## Examples

The following example configures Fast Ethernet interface 0 for standard ARPA encapsulation (the default setting) on a Cisco 4500 or 4700 series routers:

```
interface fastethernet 0
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**show interfaces fastethernet**

# interface group-async

To create a group interface that will serve as master, to which asynchronous interfaces can be associated as members, use the **interface group-async** global configuration command. Use the **no** form of the command to restore the default.

**interface group-async** *unit-number*
**no interface group-async** *unit-number*

## Syntax Description

| | |
|---|---|
| *unit-number* | The number of the asynchronous group interface being created. |

## Default

No interfaces are designated as group masters.

## Command Mode

Global configuration

## Usage Guidelines

Using the **interface group-async** command, you create a single asynchronous interface to which other interfaces are associated as members using the **group-range** command. This one-to-many configuration allows you to configure all associated member interfaces by entering one command on the group master interface, rather than entering this command on each individual interface. You can create multiple group masters on a device; however, each member interface can only be associated with one group.

## Examples

The following example defines asynchronous group master interface 0:

```
interface group-async 0
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**group-range**
**member**

# interface port-channel

To specify a Fast EtherChannel and enter interface configuration mode, use the **interface port-channel** global configuration command.

**interface port-channel** *channel-number*

## Syntax Description

| | |
|---|---|
| *channel-number* | Channel number assigned to this port-channel interface. Range is 1 to 4. |

## Default

No Fast EtherChannel is specified.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.1 CA.

The Fast EtherChannel feature allows multiple Fast Ethernet point-to-point links to be bundled into one logical link to provide bidirectional bandwidth of up to 800 Mbps. Fast EtherChannel can be configured between Cisco 7000 and 7500 series routers with the 7000 Series Route Switch Processor (RSP7000) and 7000 Series Chassis Interface (RSP7000CI), or between a Cisco 7000 or 7500 series router with the RSP7000 and RSP700CI and a Catalyst 5000 switch.

You can configure the port-channel interface as you would do to any Fast Ethernet interface.

After you create a port-channel interface, you assign Fast Ethernet interfaces (up to four) to it. For information on how to assign a Fast Ethernet interface to a port-channel interface, refer to the **channel-group** interface configuration command.

**Caution** The port-channel interface is the routed interface. Do not enable Layer 3 addresses on the physical Fast Ethernet interfaces. Do not assign bridge groups on the physical Fast Ethernet interfaces because it creates loops. Also, you must disable spanning tree.

---

**Note** If you configure ISL, you must assign the IP address to the subinterface (for example, **interface port-channel 1.1**—an IP address per VLAN) and you must specify the encapsulation with VLAN number under that subinterface (for example, **encapsulation isl 100**) for ISL to work.

---

---

**Note** Currently, if you want to use the Cisco Discovery Protocol (CDP), you must configure it only on the port-channel interface and not on the physical Fast Ethernet interface.

---

**Note** If you do not assign a static MAC address on the port-channel interface, the Cisco IOS software automatically assigns a MAC address. If you assign a static MAC address and then later remove it, the Cisco IOS software automatically assigns a MAC address.

**Caution** With Release 11.1(20)CC, the Fast EtherChannel supports CEF/dCEF. We recommend that you clear all explicit **ip route-cache distributed** commands from the Fast Ethernet interfaces before enabling dCEF on the port-channel interface. Doing this gives the port-channel interface proper control of its physical Fast Ethernet links. When you enable CEF/dCEF globally, all interfaces that support CEF/dCEF are enabled. When CEF/dCEF is enabled on the port-channel interface, it is automatically enabled on each of the Fast Ethernet interfaces in the channel group. However, if you have previously disabled CEF/dCEF on the Fast Ethernet interface, CEF/dCEF is not automatically enabled. In this case, you must enable CEF/dCEF on the Fast Ethernet interface.

## Example

The following example creates a port-channel interface with a channel group number of 1 and adds three Fast Ethernet interfaces to port-channel 1:

```
Router(config)# interface port-channel 1
Router(config-if)# ip address 1.1.1.10 255.255.255.0
Router(config)# interface fastethernet 1/0/0
Router(config-if)# channel-group 1
Router(config)# interface fastethernet 4/0/0
Router(config-if)# channel-group 1
Router(config)# interface fastethernet 5/0/0
Router(config-if)# channel-group 1
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**channel-group**
**show interfaces port-channel**

# interface vg-anylan

Use the **interface vg-anylan** global configuration command to specify the interface on a 100VG-AnyLAN port adapter and enter interface configuration mode on Cisco 7200 series routers and Cisco 7500 series routers.

**interface vg-anylan** *slot*/*port-adapter*/*port* (VIP cards in Cisco 7500 series routers)
**interface vg-anylan** *slot*/*port* (Cisco 7200 series routers)

## Syntax Description

| | |
|---|---|
| *slot* | Refer to the appropriate hardware manual for slot and port information. |
| *port* | Refer to the appropriate hardware manual for slot and port information. |
| *port-adapter* | Refer to the appropriate hardware manual for information about port adapter compatibility. |

## Default

No interfaces are specified.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3.

The 100VG-AnyLAN port adapter provides a single interface port that is compatible with and specified by IEEE 802.12. The 100VG-AnyLAN port adapter provides 100 Mbps over Category 3 or Category 5 unshielded twisted-pair (UTP) cable with RJ-45 terminators, and supports IEEE 802.3 Ethernet packets.

You configure the 100VG-AnyLAN port adapter as you would any Ethernet or Fast Ethernet interface. The 100VG-AnyLAN port adapter can be monitored with the IEEE 802.12 Interface MIB.

## Example

The following example specifies the 100VG-AnyLAN port adapter in the first port adapter in slot 1:

```
interface vg-anylan 1/0/0
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**frame-type**
**show interfaces vg-anylan**

# international bit

To set the E3 international bit in the G.751 frame used by the PA-E3 port adapter, use the **international bit** interface configuration command. To return to the default international bit, use the **no** form of this command.

**international bit** {**0** | **1**} {**0** | **1**}
**no international bit**

## Syntax Description

| | |
|---|---|
| **0** \| **1** | Specifies the value of the first international bit in the G.751 frame. The default is 0. |
| **0** \| **1** | Specifies the value of the second international bit in the G.751 frame. The default is 0. |

## Default

0 0 international bit

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.1 CA.

The **international bit** command sets bits 6 and 8, respectively, of set II in the E3 frame.

To verify the international bit configured on the interface, use the **show controller serial** EXEC command.

## Example

The following example sets the international bit to 1 1 on the PA-E3 port adapter in slot 1, port-adapter slot 0, interface 0:

```
interface serial 1/0/0
 international bit 1 1
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**national bit**
**show controllers serial**

# invert data

To invert the data stream, use the **invert data** interface configuration command. This command applies only to the Cisco 7000 series routers with the RSP7000 and RSP7000CI, Cisco 7200 series routers, and Cisco 7500 series routers. Use the **no** form of this command to disable inverting the data stream.

**invert data**
**no invert data**

## Syntax Description

This command has no arguments or keywords.

## Default

Data is not inverted.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.1 CA and Release 11.2 P.

### T1 Line without B8ZS Encoding

If the interface on the PA-8T and PA-4T+ synchronous serial port adapters and the PA-T3 and PA-2T3 synchronous serial port adapters is used to drive a dedicated T1 line that does not have B8ZS encoding (a method to avoid 15 zeros), the data stream must be inverted (both TXD and RXD) either in the connecting CSU/DSU or the interface.

Inverting is a method of avoiding excessive zeroes that is superseded by the use of B8ZS encryption. This option could be needed for use with legacy equipment that supports this option. By inverting the HDLC data stream, the HDLC zero insertion algorithm becomes a ones insertion algorithm that satisfies the T1 requirements. Be careful not to invert data both on the interface and on the CSU/DSU as two data inversions will cancel each other out.

### AMI Line Coding

If the interface on the CT3IP uses AMI line coding, you must also invert the data on the T1 channel. For more information, see the **t1 linecode** controller configuration command.

## Example

The following example inverts data on serial interface 3/1/0:

```
interface serial 3/1/0
 invert data
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**t1 linecode**

# invert rxclock

To configure UIO serial port 0 or 1 on the Cisco MC3810 when the cable connected is DCE type, use the **invert rxclock** interface configuration command. The command inverts the phase of the RX clock on the UIO serial interface, which does not use the T1/E1 interface. To disable the phase inversion, use the **no** form of this command.

**invert rxclock**
**no invert rxclock**

## Syntax Description

This command has no arguments or keywords.

## Default

Receive clock signal is not inverted.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 MA.

## Example

The following example inverts the clock signal on serial interface 1:

```
interface serial 1
 invert rxclock
```

# invert-transmit-clock

The **invert txclock** command replaces this command. Refer to the description of **invert txclock** for information on the transmit clock signal.

# invert txclock

Use the **invert txclock** interface configuration command to invert the transmit clock signal. Delays between the SCTE clock and data transmission indicate that the transmit clock signal might not be appropriate for the interface rate and length of cable being used. Different ends of the wire can have variances that differ slightly.The **invert txclock** command compensates for these variances. This command replaces the **invert-transmit-clock** command.

This command applies only to Cisco 7200 series and Cisco 7500 series routers. To return to the transmit clock signal to its initial state, use the **no** form of this command.

**invert txclock**
**no invert txclock**

## Syntax Description

This command has no arguments or keywords.

## Default

Transmit clock signal is not inverted.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command was modified in Cisco IOS Release 11.3 to change the command from **invert-transmit-clock** to **invert txclock**.

Systems that use long cables or cables that are not transmitting the TxC signal (transmit echoed clock line, also known as TXCE or SCTE clock) can experience high error rates when operating at the higher transmission speeds. For example, if a PA-8T synchronous serial port adapter is reporting a high number of error packets, a phase shift might be the problem. Inverting the clock might correct this shift.

When a PA-8T or PA-4T+ port adapter interface is DTE, the **invert txclock** command inverts the TxC signal it received from the remote DCE. When the PA-8T or PA-4T+ port adapter interface is DCE, this command changes the signal back to its original phase.

## Example

The following example inverts the clock signal on serial interface 3/0:

```
interface serial 3/0
 invert txclock
```

# keepalive

To set the keepalive timer for a specific interface, use the **keepalive** interface configuration command. To turn off keepalives entirely, use the **no** form of this command.

**keepalive** [*seconds*]
**no keepalive** [*seconds*]

## Syntax Description

| | |
|---|---|
| *seconds* | (Optional) Unsigned integer value greater than 0. The default is 10 seconds. |

## Default

10 seconds

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

You can configure the keepalive interval, which is the frequency at which the Cisco IOS software sends messages to itself (Ethernet and Token Ring) or to the other end (serial), to ensure a network interface is alive. The interval in previous software versions was 10 seconds; it is now adjustable in 1-second increments down to 1 second. An interface is declared down after three update intervals have passed without receiving a keepalive packet.

Setting the keepalive timer to a low value is very useful for rapidly detecting Ethernet interface failures (transceiver cable disconnecting, cable unterminated, and so on).

A typical serial line failure involves losing Carrier Detect (CD) signal. Because this sort of failure is typically noticed within a few milliseconds, adjusting the keepalive timer for quicker routing recovery is generally not useful.

---

**Note** When adjusting the keepalive timer for a very low bandwidth serial interface, large datagrams can delay the smaller keepalive packets long enough to cause the line protocol to go down. You may need to experiment to determine the best value.

---

## Example

The following example sets the keepalive interval to 3 seconds:

```
interface ethernet 0
 keepalive 3
```

# lex burned-in-address

To set the burned-in MAC address for a LAN Extender interface, use the **lex burned-in-address** interface configuration command. To clear the burned-in MAC address, use the **no** form of this command.

**lex burned-in-address** *ieee-address*
**no lex burned-in-address**

## Syntax Description

| | |
|---|---|
| *ieee-address* | 48-bit IEEE MAC address written as a dotted triplet of four-digit hexadecimal numbers. |

## Default

No burned-in MAC address is set.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

Use this command only on a LAN Extender interface that is not currently active (not bound to a serial interface).

## Example

The following example sets the burned-in MAC address on LAN Extender interface 0:

```
interface serial 4
 encapsulation ppp
interface lex 0
 lex burned-in-address 0000.0c00.0001
 ip address 131.108.172.21 255.255.255.0
```

# lex input-address-list

To assign an access list that filters on MAC addresses, use the **lex input-address-list** interface configuration command. To remove an access list from the interface, use the **no** form of this command.

**lex input-address-list** *access-list-number*
**no lex input-address-list**

## Syntax Description

| | |
|---|---|
| *access-list-number* | Number of the access list you assigned with the **access-list** global configuration command. It can be a number from 700 to 799. |

## Default

No access lists are preassigned to a LAN Extender interface.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

The **no lex input-address-list** command first appeared in Cisco IOS Release 10.0.

Use the **lex input-address-list** command to filter the packets that are allowed to pass from the LAN Extender to the core router. The access list filters packets based on the source MAC address.

The LAN Extender interface does not process MAC-address masks. Therefore, you should omit the mask from the **access-list** commands.

For LAN Extender interfaces, an implicit permit everything entry is automatically defined at the end of an access list. Note that this default differs from other access lists, which have an implicit deny everything entry at the end of each access list.

## Example

The following example applies access list 710 to LAN Extender interface 0. This access list denies all packets from MAC address 0800.0214.2776 and permits all other packets.

```
access-list 710 deny 0800.0214.2776
interface lex 0
 lex input-address-list 710
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**access-list**

# lex input-type-list

Use the **lex input-type-list** interface configuration command to assign an access list that filters Ethernet packets by type code. To remove an access list from the interface, use the **no** form of this command.

**lex input-type-list** *access-list-number*
**no lex input-type-list**

## Syntax Description

| | |
|---|---|
| *access-list-number* | Number of the access list you assigned with the **access-list** global configuration command. It can be a number in the range 200 to 299. |

## Default

No access lists are preassigned to a LAN Extender interface.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

Filtering is done on the LAN Extender chassis.

The LAN Extender interface does not process masks. Therefore, you should omit the mask from the **access-list** commands.

For LAN Extender interfaces, an implicit permit everything entry is automatically defined at the end of an access list. Note that this default differs from other access lists, which have an implicit deny everything entry at the end of each access list.

## Example

The following example applies access list 220 to LAN Extender interface 0. This access list denies all AppleTalk packets (packets with a type field of 0x809B) and permits all other packets.

```
access-list 220 deny 0x809B 0x0000
interface lex 0
 lex input-type-list 220
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**access-list**

# lex priority-group

Use the **lex priority-group** interface configuration command to activate priority output queuing on the LAN Extender. To disable priority output queuing, use the **no** form of this command.

**lex priority-group** *group*
**no lex priority-group**

## Syntax Description

| | |
|---|---|
| *group* | Number of the priority group. It can be a number in the range 1 to 10. |

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

To define queuing priorities, use the **priority-list protocol** global configuration command. Note that you can use only the following forms of this command:

**priority-list** *list* **protocol** *protocol* {**high** | **medium** | **normal** | **low**}

**priority-list** *list* **protocol bridge** {**high** | **medium** | **normal** | **low**} **list** *list-number*

If you specify a protocol that does not have an assigned Ethernet type code, such as **x25**, **stun**, or **pad**, it is ignored and will not participate in priority output queuing.

## Example

The following example activates priority output queuing on LAN Extender interface 0:

```
priority-list 5 protocol bridge medium list 701
lex interface 0
lex priority-group 5
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**priority-list protocol**

# lex retry-count

Use the **lex retry-count** interface configuration command to define the number of times to resend commands to the LAN Extender chassis. To return to the default value, use the **no** form of this command.

**lex retry-count** *number*
**no lex retry-count** [*number*]

## Syntax Description

| | |
|---|---|
| *number* | Number of times to retry sending commands to the LAN Extender. It can be a number in the range 0 to 100. The default is 10 times. |

## Default

10

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

After the router has sent a command the specified number of times without receiving an acknowledgment from the LAN Extender, it stops sending the command altogether.

## Example

The following example resends commands 20 times to the LAN Extender:

```
lex interface 0
lex retry-count 20
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**lex timeout**

# lex timeout

Use the **lex timeout** interface configuration command to define the amount of time to wait for a response from the LAN Extender. To return to the default time, use the **no** form of this command.

**lex timeout** *milliseconds*
**no lex timeout** [*milliseconds*]

## Syntax Description

| | |
|---|---|
| *milliseconds* | Time, in milliseconds, to wait for a response from the LAN Extender before resending the command. It can be a number in the range 500 to 60000. The default is 2000 milliseconds (2 seconds). |

## Default

2000 milliseconds (2 seconds)

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

The **lex timeout** command defines the amount of time that the router waits to receive an acknowledgment after having sent a command to the LAN Extender.

## Example

The following example causes unacknowledged packets to be resent at 4-second intervals:

```
lex interface 0
lex timeout 4000
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**lex retry-count**

# linecode

Use the **linecode** controller configuration command to select the line-code type for T1 or E1 line.

**linecode** {**ami** | **b8zs** | **hdb3**}

## Syntax Description

| | |
|---|---|
| **ami** | Specifies alternate mark inversion (AMI) as the line-code type. Valid for T1 or E1 controllers. |
| **b8zs** | Specifies B8ZS as the line-code type. Valid for T1 controller only. |
| **hdb3** | Specifies high-density bipolar 3 (hdb3) as the line-code type. Valid for E1 controller only. |

## Defaults

AMI is the default for T1 lines.

High-density bipolar 3 is the default for E1 lines.

## Command Mode

Controller configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

Use this command in configurations where the router or access server must communicate with T1 fractional data lines. The T1 service provider determines which line-code type, either **ami** or **b8zs**, is required for your T1 circuit. Likewise, the E1 service provider determines which line-code type, either **ami** or **hdb3**, is required for your E1 circuit.

## Example

The following example specifies B8ZS as the line-code type:

```
linecode b8zs
```

# link-test

To reenable the link-test function on a port on an Ethernet hub of a Cisco 2505 or Cisco 2507, use the **link-test** hub configuration command. Use the **no** form of this command to disable this feature if a pre-10BaseT twisted-pair device not implementing link test is connected to the hub port.

**link-test**
**no link-test**

## Syntax Description

This command has no arguments or keywords.

## Default

Enabled

## Command Mode

Hub configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

This command applies to a port on an Ethernet hub only. Disable this feature if a 10BaseT twisted-pair device at the other end of the hub does not implement the link test function.

## Example

The following example disables the link test function on hub 0, ports 1 through 3:

```
hub ethernet 0 1 3
no link-test
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**hub**

# local-lnm

To enable Lanoptics Hub Networking Management of a PCbus Token Ring interface, use the **local-lnm** interface configuration command. Use the **no** form of this command to disable Lanoptics Hub Networking Management.

**local-lnm**
**no local-lnm**

## Syntax Description

This command has no arguments or keywords.

## Default

Management is not enabled.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.3.

The Token Ring interface on the AccessPro PC card can be managed by a remote LAN manager over the PCbus interface. At present, the Lanoptics Hub Networking Management software running on an IBM compatible PC is supported.

## Example

The following example enables Lanoptics Hub Networking Management:

```
local-lnm
```

# loopback (interface)

To diagnose equipment malfunctions between interface and device, use the **loopback** interface configuration command. The **no** form of this command disables the test.

**loopback**
**no loopback**

## Syntax Description

This command has no arguments or keywords.

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

On HSSI serial interface cards, the loopback function configures a two-way internal and external loop on the HSA applique of the specific interface.

On MCI and SCI serial interface cards, the loopback functions when a CSU/DSU or equivalent device is attached to the router or access server. The **loopback** command loops the packets through the CSU/DSU to configure a CSU loop, when the device supports this feature.

On the MCI and MEC Ethernet cards, the interface receives back every packet it sends when the **loopback** command is enabled. Loopback operation has the additional effect of disconnecting network server functionality from the network.

On the CSC-FCI FDDI card, the interface receives back every packet it sends when the **loopback** command is enabled. Loopback operation has the additional effect of disconnecting network server functionality from the network.

On all Token Ring interface cards (except the 4-megabit CSC-R card), the interface receives back every packet it sends when the **loopback** command is enabled. Loopback operation has the additional effect of disconnecting network server functionality from the network.

---

**Note** Loopback does not work on an X.21 DTE because the X.21 interface definition does not include a loopback definition.

---

To show interfaces currently in loopback operation, use the **show interfaces loopback** EXEC command.

## Example

The following example configures the loopback test on Ethernet interface 4:

```
interface ethernet 4
 loopback
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**down-when-looped**
**show interfaces loopback**

# loopback (E3/T3 interface)

To loop the serial interface on a PA-E3 or a PA-T3 port adapter, use the **loopback** interface configuration command. To remove the loopback, use the **no** form of this command.

**loopback** {**dte** | **local** | **network** {**line** | **payload**}} (PA-E3)
**loopback** {**dte** | **local** | **network** {**line** | **payload**} | **remote**} (PA-T3)
**no loopback**

## Syntax Description

| | |
|---|---|
| **dte** | Sets the loopback after the LIU toward the terminal. |
| **local** | Sets the loopback after going through the framer toward the terminal. |
| **network** {**line** | **payload**} | Sets the loopback toward the network before going through the framer (**line**) or after going through the framer (**payload**). |
| **remote** | Sends a far-end alarm control (FEAC) to set the remote framer in loopback. |

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.1 CA.

Use this command for troubleshooting purposes.

To verify that a loopback is configured on the interface, use the **show interface serial** or **show interfaces loopback** EXEC command.

## Example

The following example configures the serial interface located in slot 3/0/0 for a local loopback:

```
interface serial 3/0/0
 loopback local
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**show controllers serial**

# loopback (T1 interface)

To loop individual T1 channels on the Channelized T3 Interface Processor (CT3IP) in Cisco 7000 series routers with the RSP7000 and RSP7000CI and in Cisco 7500 series routers, use the **loopback** interface configuration command. Use the **no** form of this command to remove the loopback.

**loopback** [**local** | **network** {**line** | **payload**} | **remote** {**line** {**fdl** {**ansi** | **bellcore**} | **inband**} | **payload** [**fdl**] [**ansi**]}]
**no loopback**

## Syntax Description

| | |
|---|---|
| **local** | (Optional) Loops the router output data back toward the router at the T1 framer and sends an AIS signal out toward the network. |
| **network** {**line** \| **payload**} | (Optional) Loops the data back toward the network before the T1 framer and automatically sets a local loopback at the HDLC controllers (line) or loops the payload data back toward the network at the T1 framer and automatically sets a local loopback at the HDLC controllers (payload). |
| **remote line fdl** {**ansi** \| **bellcore**} | (Optional) Sends a repeating, 16-bit ESF data link code word (00001110 11111111 for FDL ANSI and 00010010 11111111 for FDL Bellcore) to the remote end requesting that it enter into a network line loopback. Specify the **ansi** keyword to enable the remote line Facility Data Link (FDL) ANSI bit loopback on the T1 channel, per the ANSI T1.403 Specification. Specify the **bellcore** keyword to enable the remote SmartJack loopback on the T1 channel, per the TR-TSY-000312 Specification. |
| **remote line inband** | (Optional) Sends a repeating, 5-bit inband pattern (00001) to the remote end requesting that it enter into a network line loopback. |
| **remote payload** [**fdl**] [**ansi**] | (Optional) Sends a repeating, 16-bit ESF data link code word (00010100 11111111) to the remote end requesting that it enter into a network payload loopback. Enables the remote payload Facility Data Link (FDL) ANSI bit loopback on the T1 channel.<br><br>You can optionally specify **fdl** and **ansi**, but it is not necessary. |

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.1 CA.

Use this command for troubleshooting purposes.

To better diagnose T1 provisioning problems, you can place the the remote CSU or remote SmartJack into loopback. The **loopback remote line fdl** interface configuration command allows you to place either the CSU or the SmartJack into loopback:

- **ansi**—Places the CSU into loopback, per the ANSI T1.403 Specification
- **bellcore**—Places the SmartJack into loopback, per the TR-TSY-000312 Specification

When both are configured, transmission of LOF indication (yellow alarm) takes priority over transmission of some FDL messages.

If the remote loopback appears not to be working, use the **show cont t3** command to determine if the given T1 is currently attempting to transmit a LOF indication (yellow alarm):

```
Router# show controllers t3 0/0/0:2
 T3 0/0/0 is up.
   CT3 H/W Version: 5, CT3 ROM Version: 1.2, CT3 F/W Version: 2.5.9
   Mx H/W version: 2, Mx ucode ver: 1.34

   T1 2 is down, speed: 1536 kbs, non-inverted data
   timeslots: 1-24
   FDL per AT&T 54016 spec.
   Transmitter is sending LOF Indication.
   Receiver is getting AIS.
```

If the transmitter is sending a LOF indication, as in the previous example, stop the transmission of the LOF indication (yellow alarm) with the **no t1 yellow generation** configuration command as shown in the following example:

```
Router(config)# controllers t3 0/0/0
Router(config-controll)# no t1 2 yellow generation
Router(config-controll)# ^D
```

To verify that the transmission of the LOF indication (yellow alarm) has stopped, use the **show cont t3** command:

```
Router# show cont t3 0/0/0:2
 T3 0/0/0 is up.
   CT3 H/W Version: 5, CT3 ROM Version: 1.2, CT3 F/W Version: 2.5.9
   Mx H/W version: 2, Mx ucode ver: 1.34
   T1 2 is down, speed: 1536 kbs, non-inverted data
   timeslots: 1-24
   FDL per AT&T 54016 spec.
   Receiver is getting AIS.
   Framing is ESF, Line Code is B8ZS, Clock Source is Internal.
   Yellow Alarm Generation is disabled
```

Then retry the remote loopback command. When diagnosis is complete, remember to re-enable the LOF indication (yellow alarm).

You can also loopback all the T1 channels by using the **loopback (CT3IP)** interface configuration command.

## Example

The following example configures T1 channel 5 for a local loopback:

```
interface serial 3/0/0:5
 loopback local
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**loopback (T3)**

# loopback (T3 controller)

To loop the entire T3 (all 28 T1 channels) on the Channelized T3 Interface Processor (CT3IP) in Cisco 7500 series routers, use the **loopback** controller configuration command. Use the **no** form of this command to remove the loopback.

**loopback** [**local** | **network** | **remote**]
**no loopback**

## Syntax Description

| | |
|---|---|
| **local** | (Optional) Loops the data back toward the router and sends an AIS signal out toward the network. |
| **network** | (Optional) Loops the data toward the network at the T1 framer. |
| **remote** | (Optional) Sends a far-end alarm control (FEAC) request to the remote end requesting that it enter into a network line loopback. FEAC requests (and therefore remote loopbacks) are only possible when the T3 is configured for C-bit framing. The type of framing used is determined by the equipment you are connecting to (for more information, see the **framing** controller command). |

## Default

Disabled

## Command Mode

Controller configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3.

Use this command for troubleshooting purposes.

You can also loopback each T1 channel by using the **loopback** interface configuration command.

For more information, refer to the "Troubleshoot the T3 and T1 Channels" section in the "Configuring Serial Interfaces" chapter of the *Cisco IOS Interface Configuration Guide*.

## Example

The following example configures the CT3IP for a local loopback:

```
controller t3 3/0/0
 loopback local
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**loopback remote (interface)**

# loopback applique

To configure an internal loop on the HSSI applique, use the **loopback** interface configuration command. To remove the loop, use the **no** form of this command.

**loopback applique**
**no loopback applique**

## Syntax Description

This command has no arguments or keywords.

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command loops the packets within the applique, to provide a way to test communication within the router or access server. It is useful for sending pings to yourself to check functionality of the applique.

To show interfaces currently in loopback operation, use the **show interfaces loopback** EXEC command.

## Example

The following example configures the loopback test on the HSSI applique:

```
interface serial 1
 loopback applique
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**show interfaces loopback**

# loopback dte

To loop packets back to the DTE from the CSU/DSU, when the device supports this feature, use the **loopback** interface configuration command. To remove the loop, use the **no** form of this command.

**loopback dte**
**no loopback dte**

## Syntax Description

This command has no arguments or keywords.

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command is useful for testing the DTE-to-DCE cable.

This command is used to test the performance of the integrated CSU/DSU. Packets are looped from within the CSU/DSU back to the serial interface of the router. Send a test ping to see if the packets successfully looped back. To cancel the loopback test, use the **no loopback dte** command.

When using the 4-wire 56/64-kbps CSU/DSU module, an out-of-service signal is transmitted to the remote CSU/DSU.

To show interfaces currently in loopback operation, use the **show interfaces loopback** EXEC command.

## Example

The following example configures the loopback test on the DTE interface:

```
router(config)# interface serial 0
router(config-if)# loopback dte
router(config-if)#
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**show interfaces loopback**

# loopback line

Use the **loopback line** interface configuration command, to loop packets completely through the CSU/DSU to configure the CSU loop. To remove the loop, use the **no** form of this command.

**loopback line** [**payload**]
**no loopback line** [**payload**]

## Syntax Description

| | |
|---|---|
| **payload** | (Optional) Configures a loopback point at the DSU and loops back data to the network on an integrated CSU/DSU. |

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

This command is useful for testing the DCE device (CSU/DSU) itself. When the **loopback line** command is configured on the 2-wire 56-kbps CSU/DSU module or the 4-wire 56/64-kbps CSU/DSU modules, the network data loops back at the CSU and the router data loops back at the DSU. If the CSU/DSU is configured for switched mode, you must have an established connection to perform a payload-line loopback. To loop the received data through the minimum amount of CSU/DSU circuitry, issue the **loopback line** command.

When you issue the **loopback line payload** command on an integrated CSU/DSU module, the router cannot transmit data through the serial interface for the duration of the loopback. Choosing the DSU as a loopback point loops the received-network data through the maximum amount of CSU/DSU circuitry. Data is not looped back to the serial interface. An active connection is required when operating in switched mode for payload loopbacks.

If you enable the **loopback line** command on the fractional T1/T1 module, the CSU/DSU performs a full-bandwidth loopback through the CSU portion of the module and data transmission through the serial interface is interrupted for the duration of the loopback. No reframing or corrections of bipolar violation errors or cyclic redundancy check (CRC) errors are performed. When you configure the **loopback line payload** command on the FT1/T1 module, the CSU/DSU performs a loopback through the DSU portion of the module. The **loopback line payload** command reframes the data link, regenerates the signal, and corrects bipolar violations and Extended Super Frame CRC errors.

When performing a T1-line loopback with Extended Super Frame, communication over the facilities data link is interrupted, but performance statistics are still updated. To show interfaces currently in loopback operation, use the **show service-module** EXEC command.

To show interfaces currently in loopback operation on other routers, use the **show interfaces loopback** EXEC command.

## Examples

The following example configures the loopback test on the DCE device:

```
interface serial 1
 loopback line
```

The following example shows how to configure a payload loopback on a Cisco 2524 or 2525 router:

```
Router1(config-if)#loopback line payload
Loopback in progress
Router1(config-if)#no loopback line
```

The following example shows the output on a Cisco 2524 or 2525 router when you loop a packet in switched mode without an active connection:

```
Router1(config-if)#service-module 56k network-type switched
Router1(config-if)#loopback line payload
Need active connection for this type of loopback
% Service module configuration command failed: WRONG FORMAT.
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**show interfaces loopback**

# loopback remote (interface)

To loop packets through a CSU/DSU, over a DS-3 link or a channelized T1 link, to the remote CSU/DSU and back, use the **loopback remote** interface configuration command. To remove the loopback, use the **no** form of this command.

**loopback remote** {**full** | **payload** | **smart-jack**} [**0in1** | **1in1** | **1in2** | **1in5** | **1in8** | **3in24** | **qrw** | **user-pattern** *24bit-binary value*]
**no loopback remote** {**full** | **payload** | **smart-jack**}

**loopback remote** [**2047** | **511** | **stress-pattern** *pattern number*]
**no loopback remote**

**Note** The keywords **full**, **payload**, **smart-jack**, **0in1** through **3in24**, **qrw**, and **user-pattern** *24bit-binary value* apply to the fractional T1/T1 CSU/DSU module. The keywords **2047**, **511**, and **stress-pattern** apply to the 2- and 4-wire 56/64-kbps CSU/DSU module. The features for each module are grouped and described in the following two syntax descriptions.

## Syntax Description for FT1/T1 CSU/DSU Modules

| | |
|---|---|
| **full** | Transmit a full-bandwidth line loopback request to a remote device, which is used for testing. |
| **payload** | Transmits a payload line loopback request to a remote device, which is used for testing the line and remote DSU. |
| **smart-jack** | Transmits a loopback request to the remote smart-jack, which some service providers attach on the line before the customer premises equipment (CPE). You cannot put the local smart-jack into loopback. |
| **0in1** | (Optional) Transmits an all-zeros test pattern used for verifying B8ZS line encoding. The remote end my report a loss of signal when using alternate mark inversion (AMI) line coding. |
| **1in1** | (Optional) Transmits an all-ones test pattern used for signal power measurements. |
| **1in2** | (Optional) Transmits an alternating ones and zeroes test pattern used for testing bridge taps. |
| **1in5** | (Optional) Transmits the industry standard test-pattern loopback request. |
| **1in8** | (Optional) Transmits a test pattern used for stressing timing recovery of repeaters. |
| **3in24** | (Optional) Transmits a test pattern used for testing the ones density tolerance on AMI lines. |
| **qrw** | (Optional) Transmits a quasi-random word test pattern, which is a random signal that simulates user data. |
| **user-pattern** *24bit-binary value* | (Optional) Transmits a test pattern that you define. Enter a binary string up to 24 bits long. For the fixed patterns such 0in1 and 1in1, the T1 framing bits are jammed on top of the test pattern; for the user-pattern, the pattern is simply repeated in the timeslots. |

## Syntax Description for 2- and 4-Wire, 56/64-kbps CSU/DSU Modules

| | |
|---|---|
| **2047** | Transmits a pseudo-random test pattern that repeats after 2047 bits. |
| **511** | Transmits a pseudo-random test pattern that repeats after 511 bits. |
| **stress-pattern** *pattern number* | Transmits a DDS stress pattern available only on the 4-wire 56/64-kbps CSU/DSU module. You may enter a stress pattern from 1 to 4. A 1 pattern sends 100 bytes of all 1s and then 100 bytes of all 0s to test the stress clocking of the network. A 2 pattern sends 100 bytes of a 0x7e pattern then 100 bytes of all 0s. A 3 pattern sends continuous bytes of a 0x46 pattern. A 4 pattern sends continuous bytes of 0x02 pattern. |

## Default

Disabled

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.0.

This command applies only when the remote CSU/DSU device is configured for this function. It is used for testing the data communication channels along with or without remote CSU/DSU circuitry. The loopback is usually performed at the line port, rather than the DTE port, of the remote CSU/DSU.

For a multiport interface processor connected to a network via a channelized T1 link, the **loopback remote** interface configuration command applies if the remote interface is served by a DDS line (56 kbps or 64 kbps) and the device at the remote end is a CSU/DSU. In addition, the CSU/DSU at the remote end *must* react to latched DDS CSU loopback codes. Destinations that are served by other types of lines or that have CSU/DSUs that do not react to latched DDS CSU codes cannot participate in an interface remote loopback. Latched DDS CSU loopback code requirements are described in AT&T specification TR-TSY-000476, “OTGR Network Maintenance Access and Testing.”

For the integrated FT1/T1 CSU/DSU module, the **loopback remote full** command sends the loopup code to the remote CSU/DSU. The remote CSU/DSU performs a full-bandwidth loopback through the CSU portion of the module. The **loopback remote payload** command sends the loopup code on the configured timeslots, while maintaining the D4-extended super framing. The remote CSU/DSU performs the equivalent of a loopback line payload request. The remote CSU/DSU loops back only those timeslots that are configured of the remote end. This loopback reframes the data link, regenerates the signal, and corrects bi polar violations and extended super frame CRC errors. The **loopback remote smart-jack** command sends a loopup code to the remote smart jack. You cannot put the local smart jack into loopback.

Failure to loopup or initiate a remote loopback request could be caused by enabling the **no service-module t1 remote-loopback** command or having an alternate remote-loopback code configured on the remote end. When the loopback is terminated, the result of the pattern test is displayed.

For the 2- and 4-wire, 56/64-kbps CSU/DSU module, an active connection is required before a loopup can be initiated while in switched mode. When transmitting V.54 loopbacks, the remote device is commanded into loopback using V.54 messages. Failure to loopup or initiate a remote loopback request could be caused by enabling the **no service-module 56k remote-loopback** command.

To show interfaces currently in loopback operation, use the **show interfaces loopback** EXEC command.

## Examples

The following example configures a remote loopback test:

```
Router(config)#interface serial 0
Router(config-if)#loopback remote
```

The following example configures the remote device into full-bandwidth line loopback while specifying the **qrw** test pattern over the T1 CSU/DSU module on a Cisco 2524 or Cisco 2525 router:

```
Router(config)#interface serial 0
Router(config-if)#loopback remote full qrw
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0, changed state to down
%LINK-3-UPDOWN: Interface Serial0, changed state to down
%SERVICE_MODULE-5-LOOPUPREMOTE: Unit 0 - Remote unit placed in loopback
```

The following example transmits a remote loopback stress pattern over the 4-wire, 56/64-kbps CSU/DSU module, which tests the stress clocking of the network:

```
Router(config-if)#loopback remote stress-pattern 1
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1, changed state to down
%LINK-3-UPDOWN: Interface Serial1, changed state to down
%SERVICE_MODULE-5-LOOPUPREMOTE: Unit 1 - Remote unit placed in loopback
```

## Related Commands

You can use the master indexes or search online to find documentation of related commands.

**clear service-module**
**loopback dte**
**loopback line**
**service-module 56k remote-loopback**
**service-module t1 remote-loopback**
**show service-module**